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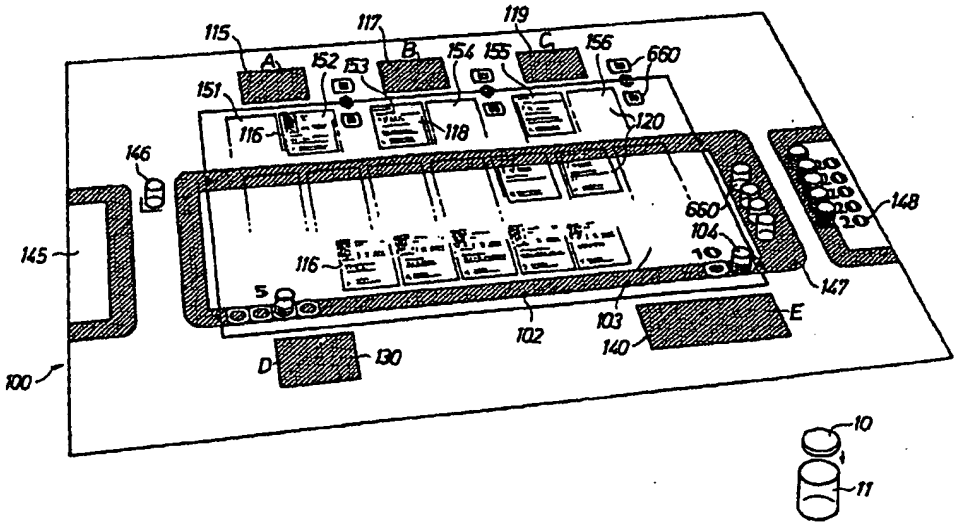

(57) Abstract

The invention relates to a system for simulating a business process for at least one company. The system comprises a model for illustrating the momentaneous status of the business process. The model exhibits a board comprising a first area comprising people cards (A), a second area comprising tools and processes cards (B), a third area comprising customer cards (C), a fourth comprising management cards (D) and a fifth administrative area (E), a sixth area (102) connecting said first to fifth areas, said sixth area (102) defining an interface between the business and the environment, means for indicating people (115, 116), means for indicating tools and processes (117, 118), means for indicating customers (119, 120), means for indicating management events (140), means (570) for indicating a predetermined value of above means (115, 116; 117, 118; 119, 120), output means (140) for producing the resulting status of the simulation at, at least one, determined point in the simulation. Means exist for allowing for at least one operator to interact with the system at predetermined points of time.

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Simulation system I

FIELD OF THE INVENTION

The present invention generally to a simulation system for simulating a business process, especially within the field of "knowledge" companies, i.e. companies the primary products of which lie in the field of knowledge.

BACKGROUND OF THE INVENTION

Although business processes are well described in literature related to economics, there are sometimes problems in making the mechanisms clear to people who are not schooled in this field. It is of course of the greatest importance to be able to forward the way of economical thinking throughout the company.

An example of prior art in this field is described in US Patent 5,056,792 (Helweg-Larsen and Cousins). This patent describes a business education model comprising tokens to indicate values of resources such as raw material, cash or debts (negative resource), a board having separate areas for representing different entities, such as plants or specific purpose locations, and cards indicating specifications for the aforementioned entities. The models used as a means to set up different business situations and to observe the consequences of decisions in monetary terms.

In manufacturing companies this is a fairly simple task, even if complicated, but in so called knowledge companies other factors influence the results, others than efficient machinery, good sub-contractors, competitors having contacts for raw materials etc. To the knowledge companies such as advertising agencies, consultants firms, law firms, etc. the employee and the tools he uses and the combination of the "right" customer and the "right" employee are the basic, fundamental components.

Prior art, however, suffer i.a. from the drawback that once having stepped through a model with established resource parameters it is hard to change the conditions in order to observe the consequences of other conditions or choices.

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SUMMARY OF THE INVENTION

The object of the invention is to make visible the interaction between the customer, employees and the organisational structure in a companies working with knowledge as their primary product and to show the value of demanding and satisfied customers, of
10 skilled people, of excellent tools and processes etc. e. i. to simulate a process in such

It is therefore an object of the present invention to provide a system for simulating a business process which system is flexible and allows for a simple change of conditions and input parameters.

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It is also an object of the invention to provide a system for simulating a business process in which the values of a selected number of parameters can be controlled and the consequences of a combination of parameter values calculated dependent on predetermined rules/events.

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These and further objects of the invention are achieved by the use of a model for simulating an interactive process in combination with a parameter processing device, the use of which allows the device parameter values to be set initially and thereafter to be manipulated, thus arriving at different status's of the model at
25 different points of time in the simulation of the process. Thus the invention resides in as system according to claim one for simulating a business process for at least one company comprising a model for illustrating the momentaneous status of the business process, said model having a board comprising a first area comprising people cards, a second area comprising tools and processes cards, a third area comprising customer
30 cards, a fourth comprising management cards and a fifth administrative area, a sixth area connecting said first to fifth areas, said sixth area defining the defining an

interface between the business and the environment, said model further having means for indicating people, means for indicating tools and processes, means for indicating customers, means for indicating management events, means for indicating a predetermined value of above means, output means for producing the resulting status of the simulation at, at least one, determined point in the simulation, and, means for allowing for at least one operator to interact with the system at predetermined points of time.

Further objects of the invention are accomplished in that said system further comprises means for indicating a monetary value of at least the status of the simulation, monetary values connected with taxes, salaries etc., and connected with people, tools and processes and customers.

Further objects are achieved by at least some of the means for indicating people,means for indicating tools and processes, means for indicating customers, and means for indicating management events also comprising means for indicating an intangible value connected to said means.

The present invention therefore provides a board exhibiting marked areas representing different parts of the company, such as the cash flow, employees, the tools people use in their work, costs, such as taxes etc.

The invention will be further described below in conjunction with the drawings of a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to explain the objects, advantages and features of the present invention, reference is made below the figures of the drawings, wherein:

These and other objects, advantages and features of the present invention will be more readily understood from the following detailed description of the preferred

embodiments thereof, when considered in conjunction with the drawings, and wherein:

Fig. 1 shows an overview of a model in accordance with an embodiment of the invention;

Fig. 2 shows two embodiments of people cards;

Fig. 3 shows three embodiments of event cards related to customers;

Fig. 4 shows an embodiment of a structure card relating to tools and processes;

Fig. 5 shows an embodiment of a parameter output interface comprised in the status description generator;

Fig. 6 shows an illustration of a decision variable, the choice of which is made by the interacting person/-s;

Fig. 7 shows an illustration of a decision interface to be used in evaluation of the market value, i.e. an output parameter.

Fig. 8 shows an example of the development as a result of the chosen strategy.

Fig. 9 shows an embodiment of the inventive system in interaction with human users.

Fig. 10 shows a schematic drawing of an embodiment of the system as used in connection with a computer.

Fig. 11 shows a flow diagram over the simulation process

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

The interacting simulation system according to the invention comprises a model for illustrating business conditions and a parameter processing device for processing parameters given in the model. The parameter processing device operates in interaction with the model and the user of the system. With the parameter processing device, parameters can be easily adjusted in order to simulate the business consequences of alternative actions and be illustrated with the model.

The model

Fig 1 shows an embodiment of a business model for illustrating business conditions. The model comprises tokens or markers 10 for indication a parameter in the form of a value, e.g. money, tools and processes, etc. These tokens are also called value markers and each token may be assigned a value equalling 1 million (M) in any monetary unit. A value carrier 11 is provided to gather an assembly of value markers. The function of this model is to express values of different kinds in the same parameter unit, and hence, values of different kinds can easily be compared.

The model further comprises a board or a map 100, also called WorkMat™, used for illustrating a business process plan, on which changes occur during the simulation. By moving the value markers around operations are simulated. people employed by the company are illustrated by people cards.

This board is divided into several areas:

A peoples cards area A contains cards 115 introducing new peoples that may be hired and the cards also tell you about changes among your employees.

The people cards 116 signifies present employees and are placed either in the areas for negotiations 151, training 152 or in the workspace 103.

A tools and process cards area B contains cards 117 that deals with opportunities to start development of new tools and processes.

The tools and processes cards 118 signifies tools and processes in use and are placed in either the areas 153, 154 for tools and processes in use. During the development these cards are place in the workspace area.

A customer cards area C comprises new customers 119 to be introduced and events relating to customers already in the business. The customer cards 120 signifies

customers you already have and are placed either in the current customers area 155,156 or in the upper row of the work space 103.

To each of the areas A through C there are two areas 660 for indicating the values represented by the respective cards in the areas. (This is illustrated more clearly in Fig.5.) The values are represented by tokens, one for the potentials in the market outside and one for the values inside the company

A management area D contains management cards 130. The management cards 130 contain brief comments on the current situation and tells you what to do next.

An administration area E contains administration instructions 140to be carried out each round of the simulation. This is where you are asked to do everything from invoicing to paying the salaries. Above this area, in a rectangular track 102, encircling a workspace 103, the monetary flow within the company is illustrated. At accounts receivable 104 the value of invoices that have not been paid are accumulated.

A subcontractor area 145 and a tax area 146 are shown to the left of the map. To the right of the track 102, areas for overhead costs and salaries 147 are arranged. Opposite these areas an area 148 comprising customers money is arranged. This money is used to pay for costs debited to the customers.

The simulation is run from A to E.

At E each period the following is performed:

1. Customers pay. Amounts receivable to Cash.
2. Invoice. Revenues from customers' money to Accounts receivable.
3. Pay salaries. From Cash to Salaries
4. Tools and processes. Move developed T&Pcards to Tools and Processes in use.
5. Register utilisation.
6. Register changes in intangible assets.

and each year the following is performed:

1. Pay overheads.
2. Close the books.
3. Pay taxes,

In Fig. 2 embodiments of peoples cards 115, 116 are shown, having a cost indicator 201, and an indicator for professional and social skills 202, i.e. their intangible assets 570. The professional and social competence of the employees creates value only if used. Individuals create revenue and also provide relations to customers and partners, new experiences and insights, knowledge sharing and synergy. A brief description 203 of some characteristics for the person represented by the card is also given. Such a description could be "Experienced and flexible. Even if he is a specialist he is interested to work as a generalist as necessary", or "Has great potential. Generalist with potential to develop her professional skills. Prefers to work on her own."

In Fig. 3 three embodiments of customer cards 119, 120 are shown. 301 is an established stable customer 120, comprising a revenue indicator 304, and an indicator 305 for image values and price and volume value, i.e. their intangible values 570. Also, there is a brief description 306 of the relationship between the company and the customer 301 represented by the card.

Card 302 is a customer card with an action indicator 307, such as "Mimosa leaves: The relationship with Jones was an important reason, but also the low structure and competence level. Interest shown: The customer Capella shows interest but expects

more structure. May come back later.", and card 303 has an action indicator 308, stating e.g. "A promising contact: The essential customer Virgo shows interest. But for the time being you do not meet the required competence level. Will certainly come back later."

In Fig. 4 a Tools and processes card 117 or 118 is shown. A cost indicator 401 is given, as well as an indicator for customer relating effect and internal relating effect 403, i.e. the intangible value 570. In this figure is also shown a degree of utilisation symbol 402.

The intangible values 570 are indicated on the cards by indicators 202, 305 and 403, as previously mentioned, and is accompanied by a grade value, e.g. 2 or 5, indicating lower and higher intangible values, respectively.

In Fig. 5 is shown an output interface comprised in the status generator, comprising fields for company market value 601, equity 602, and intangible assets 603. The intangible assets are built upon customer value 604 and know-how value 605. In turn, the know-how value comprises the value of tools and processes 606 and the value of people competence 607. The board is used to show the whereabouts of the intangible assets of the company. The intangible assets are all inside the company and the possibilities are all outside the company. To each of the areas A through C there are to areas 660 for indicating the values represented by the respective cards in the areas.

In Fig. 6 an illustration of a decision variable is given. The choice of which value should be given is made by the interacting person/-s. Different challenges are given for the year and several choices has to be made. A diagram of the expected sales to customers with different requirements is shown, as a function of time. Such different requirements can be highly competent individuals represented by 701, a high degree of strategy 702 or no specific requests 703.

In Appendix A2 an illustration of an output interface 801 for evaluating the results of the simulation after year 2 is shown. Parameters are taken from the model at the end of Year 2 and registered in the output interface to make clear the status of the business. Two possible strategy approaches have been made in two simulations of Year 2. The approaches are "Volume" and "Niche". The output interface is preferably made out as an annual report, including Profit and Loss statement and Balance sheet. The Balance sheet also includes fields for intangible assets 802.

In Fig. 7 an illustration of a decision interface to be used in evaluation of the market value, i.e. an output parameter is shown. The outcome of the strategy can easily be illustrated in this decision interface in which the strategies from Appendix A1 is compared for the two different strategies, "Volume" and "Niche". Other choices may of course be made by the participants of the simulation and likewise be compared. The strategy "Volume" 701 is based on Tools & Processes and the strategy "Niche" 702 is based on Competence. The results of such a simulation is of course dependent on the customers and employees involved etc. Examples of parts of the Market value of the company compared are Equity 703, Customers 704, Tools & Processes 705, and People 706.

In Appendix A2 an illustration of an output interface 1001 for evaluating the results of the simulation, year 3 is shown, much like the output interface 801 of Appendix A1. The same strategies as above have been employed, and the intangible assets 1002 are included.

In Fig. 8 an example of the development of the total assets as a result of the chosen strategy is shown using resulting variables from the simulation over a period. 1101 shows the result for volume strategy and 1102 for "Niche" strategy. 1103 represents Equity, 1104 Tools & Processes, 1105 Customers and 1106 People.

An embodiment of the inventive system in interaction with human users is shown in Fig. 9. A parameter processing device is especially devised to interact with the model

and the people running a business simulation. To this end , the device is provided with a number of functions having human/machine interfaces set up to receive input parameter values as input and to deliver consequence descriptions, i.e. different profiles and data and loss statements etc. A parameter processing device 1202 realised by means of a standard computer set, set up with a specific program comprising means in accordance with the inventive concept is shown in interaction with human users 1204 and a model 1206. The computer set comprises per se known data processors, storage medium, data presentation device, and data I/O-devices. Simulation parameters are processed by means of the model. Input and output parameters to and from the model and the parameter processing device are handled by the interacting human user 1204. The parameter processing device is provided with a number of parameter input and output interfaces as well as different parameter processing device units for different simulation parameters.

Status parameter processing:

An embodiment of the parameter processing device is provided with means for generating a description of the status a company or business, i.e. company status parameters. In general, the status of a company can be described in what can be called soft value parameters. In this test, soft value terms understood to mean a description of company status parameters expressed in more or less vague human terms. A function of the means for generating a description of the status of a company is to compile the soft value parameters into a more to the point description of a company status. examples of soft value parameters is strength of company image, product quality. quality of tools used, quality of the persons performing the assignments etc. Also degree if degree of utilisation or efficiency are examples of such words.

According to the invention a number of such soft values may e compiled to show the intangible assets of a business. This is described in connection with the figures.

A schematic drawing of an embodiment of the system as used in connection with a computer is shown in Fig 10.

Fig 10. shows a block diagram of an embodiment of a status description generator 1300, comprising an input interface 1304 for receiving input soft value parameters 1302. The input interface 1304 is coupled to a parameter compiler 1306 which in its turn is communicatively coupled to a rule database 1308. The rule data base 1308 is devised to store predetermined rules for interpreting and compiling input parameter values and combinations of parameter values into another parameter description here called status interpretation parameters. The rule data base is in one embodiment further devised to store predetermined action parameters suggested to put into the simulation dependent on the current status. The compiled parameters and where appropriate the action parameters are passed on to means for generating a company characteristic description. These means are also called description generator 1310 devised to generate a description of the parameters that is conceivable by human interactors. The description of output parameters 1314 is then presented by means of an output interface 1312. In the embodiment of the inventive system as shown in Fig. 10, the input and output interfaces preferably make use of the screen of the standard computer set.

In Fig. 11 a general flow diagram over the simulation process is shown. The simulation of year one starts in step 1401. In step 1402 the predetermined setup of the situation is displayed on the board, or for that matter the simulation may be implemented in the form of a data program. In step 1403 the people employed, the tools and processes in use and the customers already present are displayed. In step 1404 the management cards give instructions as to what to do next, or relates predetermined events, as people/customers leave the company or new potential such become known, tools and/or processes are developed or abandoned etc. In step 1405 new people are employed, new customers arrive, Decisions as to matching of tools-peoples-customers are made. In step 1406 the choices made by the interacting operator results in an outcome calculated according to rules in the administration area. The intangible assets are added in the annual report in step 1407. In step 1408 the simulation may be terminated by going to step 1409.

However in step 1408 the simulation may continue by returning to step 1404 and likewise from step 1405 return may be made to step 1404.

In step 1404 the management cards may of course give instructions to go to step 1406.

This is only an exemplary explanation of how the simulation may be done and should not be considered to represent the only possible embodiment of the invention. A slightly different flow of the simulation may still be within the scope of the invention.

The invention has been described with reference to a specific embodiment. Specific factors are to be take into consideration when discussing a knowledge company, a company where the specific employee place a bigger role than in the common manufacturing companies, since the value of the employee depends largely on his knowledge.

The invention has been described with reference to a business simulation system relating to one single company. Simulation could naturally be extended to span over several companies aiming at the same potential market. It should be understood that the invention as such encompasses other combinations of companies wherein the employees play the same decisive role for the results.

APPENDIX A1

5 **ANNUAL REPORT, YEAR 2** 801

Profit and Loss Statement
(in millions)

		Year 1	Year 2
Sales	+	58	
Salaries	-	42	
Contribution	=	**16**	
Overhead	-	7	
Operating Profit	=	**9**	
Taxes (1/3)	-	3	
Net Profit/Loss	=	**6**	
Key indicators			
Operating profit		9	
divided by no. of empl.		6	
Op. profit/employee	=	**1.5**	
Capacity sold		13	
divided by Total capacity		20	
Capacity utilization	=	**65 %**	**%**

Balance Sheet
(in millions)

		Year 1	Year 2
ASSETS			
Cash & equivalents	+	7	
Accouns receivable	+	14	
Total assets	=	21	
LIABILITIES & EQUITY			
Liabilities		10	
Equity			
Opening balance	+	5	//
Profit/loss this year	+	6	
Total equity	=	11	
Total liabilities and equity	=	***21***	
Intangible assets 802			
Competence value	+	14	
T & P Value	+	7	
Customer value	+	11	
Total intang. assets	=	32	
Market value			
Total equity	+	11	
Total intangible assets	+	32	
Total market value	=	43	

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APPENDIX A2

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ANNUAL REPORT, YEAR 3 1001

Profit and Loss Statement
(in millions)

		Year 1	Year 2	Year 3
Sales	+	54	71	
Salaries	-	46	45	
Contribution	=	8	26	
Overhead	-	5	5	
Operating Profit	=	3	21	
Taxes (1/3)	-	1	7	
Net Profit/Loss	=	2	14	
Key indicators				
Operating profit		3	21	
divided by no. of empl.		8	7	
Op. profit/employee	=	**0.4**	**3.0**	
Capacity sold		13	16	
divided by Total capacity		22	21	
Capacity utilization	=	59 %	76 %	%

Balance Sheet
(in millions)

			Year 1	Year 2	Year 3
ASSETS					
Cash & equivalents	+		3	6	
Accouns receivable	+		20	29	
Total assets	=		23	35	
LIABILITIES & EQUITY					
Liabilities			10	10	
Equity					
Opening balance	+		11	11	
Profit/loss this year	+		2	14	
Total equity	=		13	25	
Total liabilities and equity	=		***23***	***35***	
Intangible assets		1002			
Competence value	+		14	16	
T & P Value	+		14	7	
Customer value	+		15	20	
Total intang. assets	=		43	43	
Market value					
Total equity	+		13	25	
Total intangible assets	+		43	43	
Total market value	=		56	68	

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Claims

1. System for simulating a business process for at least one company comprising:
a model for illustrating the momentaneous status of the business process, said model having:
- a board comprising a first area comprising people cards (A), a second area comprising tools and processes cards (B), a third area comprising customer cards (C), a fourth comprising management cards (D) and a fifth administrative area (E), a sixth area 102 connecting said first to fifth areas, said sixth area 102 defining the defining an interface between the business and the environment;
- means for indicating people (115,116);
- means for indicating tools and processes (117,118);
- means for indicating customers (119,120);
- means for indicating management events (130);
- means (570) for indicating a predetermined value of above means (115,116; 117,118; 119,120);
- output means (801, 1001) for producing the resulting status of the simulation at, at least one, determined point in the simulation, and;
- means for allowing for at least one operator to interact with the system at predetermined points of time.

2. System according to claim 1, **characterized** in that said system further comprises means (10) for indicating a monetary value of at least the status of the simulation, monetary values connected with taxes, salaries etc., and connected with people (115,116), tools and processes (117,118), and customers (119,120).

3. System according to any of the preceding claims, **characterized** in that at least some of said means for indicating people (115,116), means for indicating tools and processes (117,118), means for indicating customers (119,120), means for indicating

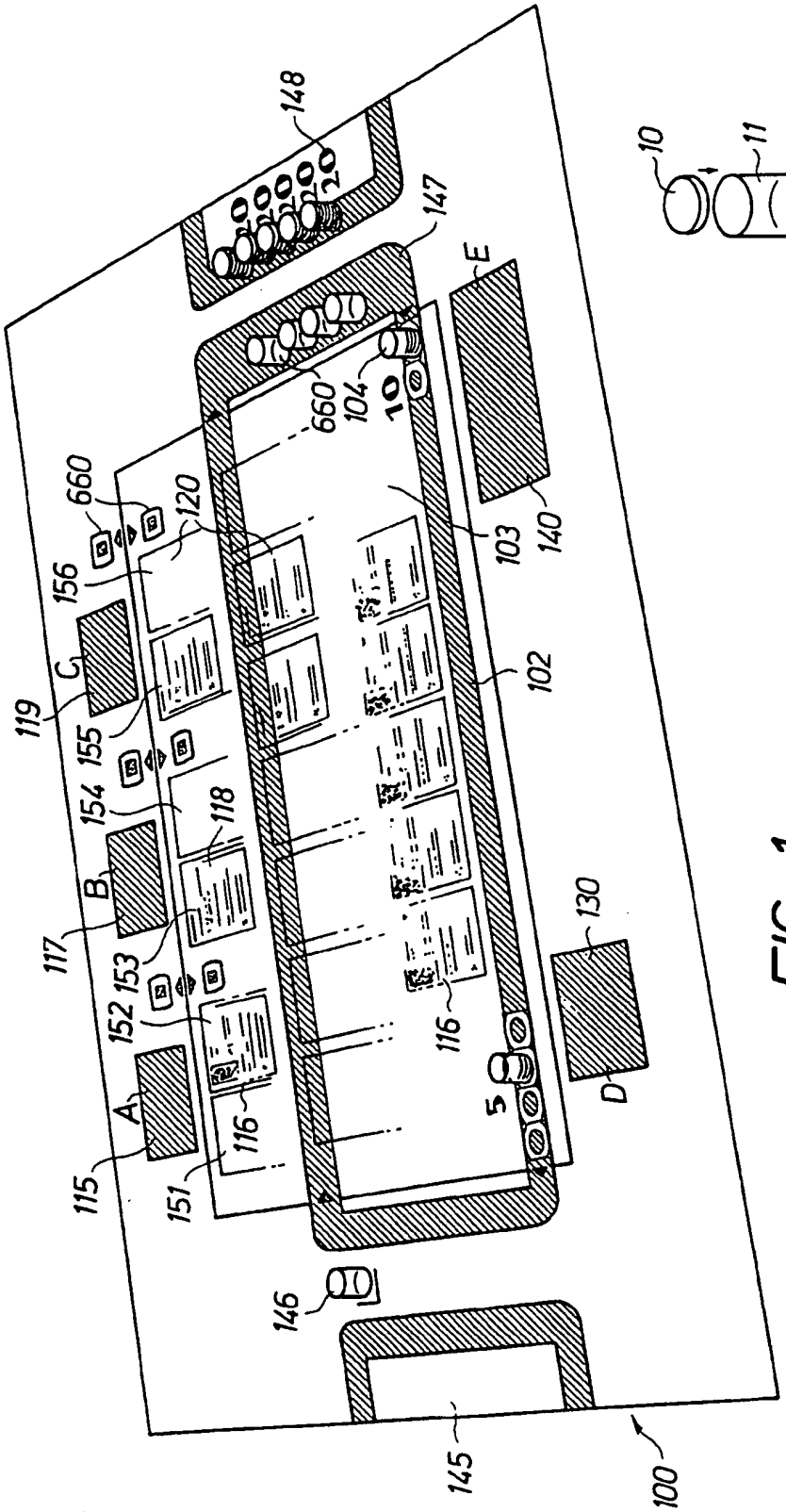
management events (140), and output means (801, 1001) also comprises means (570, 802, 1002) for indicating an intangible value connected to said means.

4. System according to any of the preceding claims, **characterized** in that said means for indicating people (115,116) comprises a set of cards.

5. System according to any of the preceding claims, **characterized** in that said means for indicating tools and processes (117,118) comprises a set of cards.

6. System according to any of the preceding claims, **characterized** in that said means for indicating customers (119,120) comprises a set of cards.

7. System according to any of the preceding claims, **characterized** in that said means for indicating management events (140) comprises a set of cards.


148
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E
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C
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119
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100
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11

FIG. 1

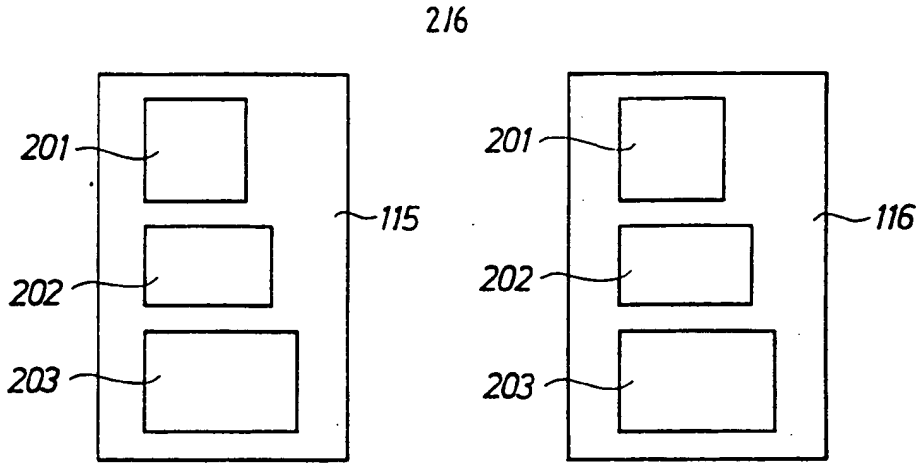


FIG. 2

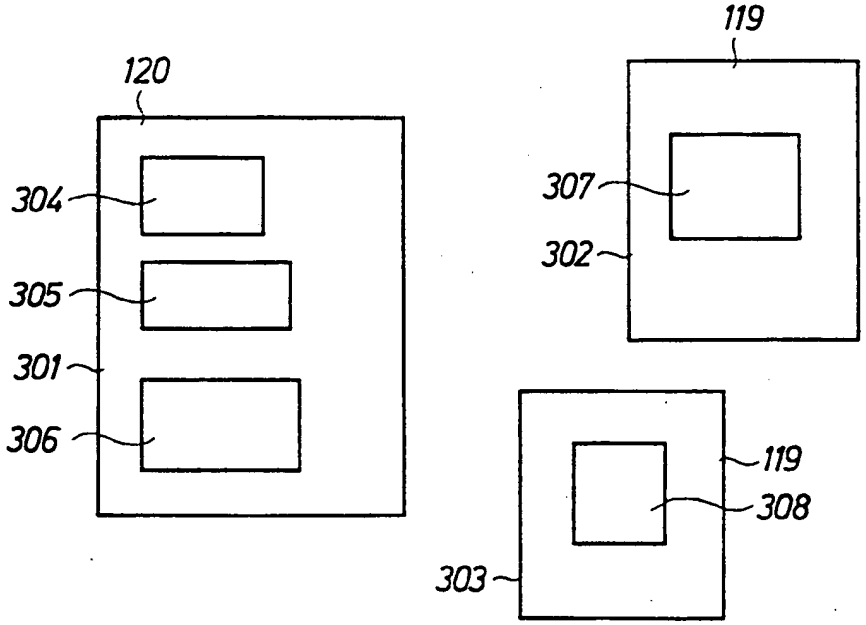


FIG. 3

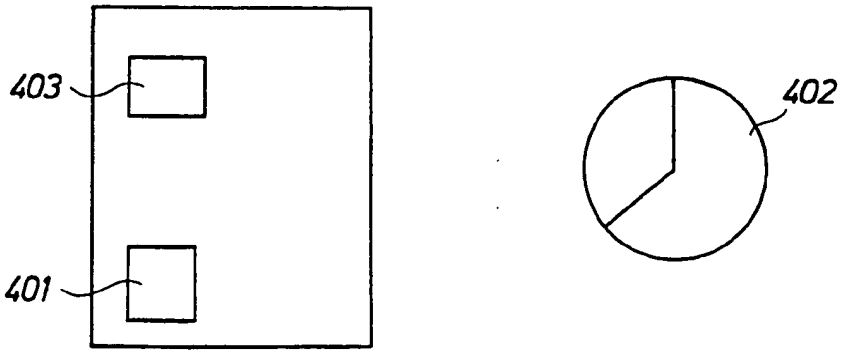
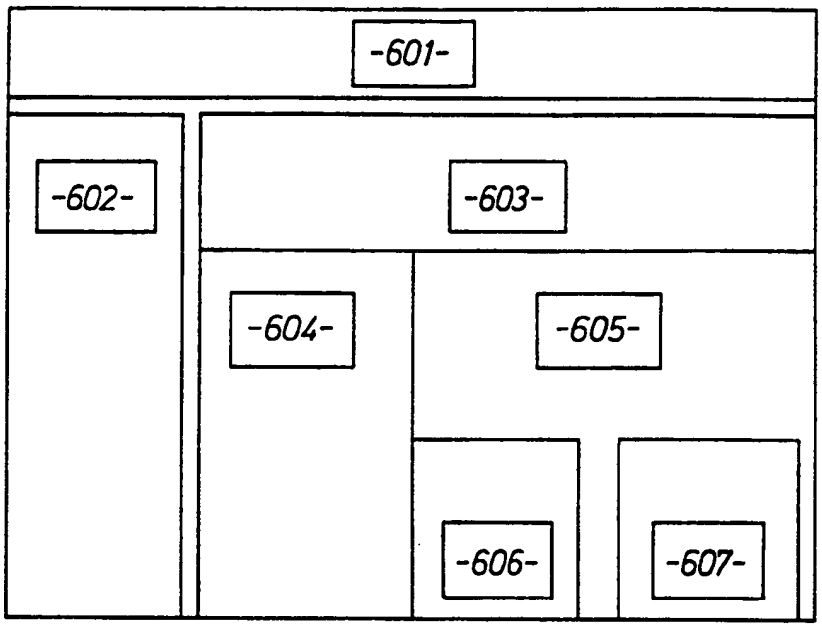


FIG. 4



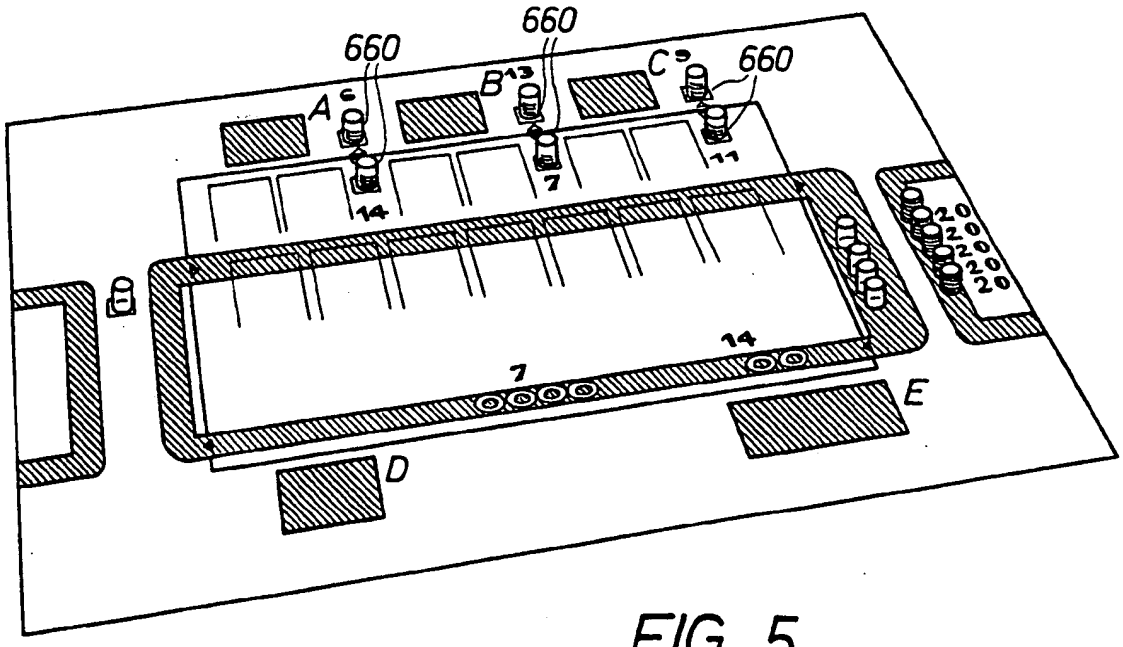


FIG. 5

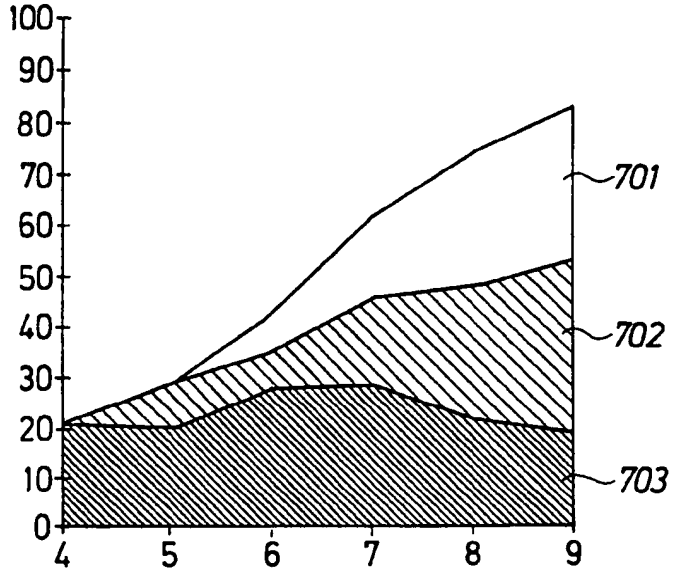

100
90
80
70
60
50
40
30
20
10
0
4
5
6
7
8
9
701
702
703

FIG. 6

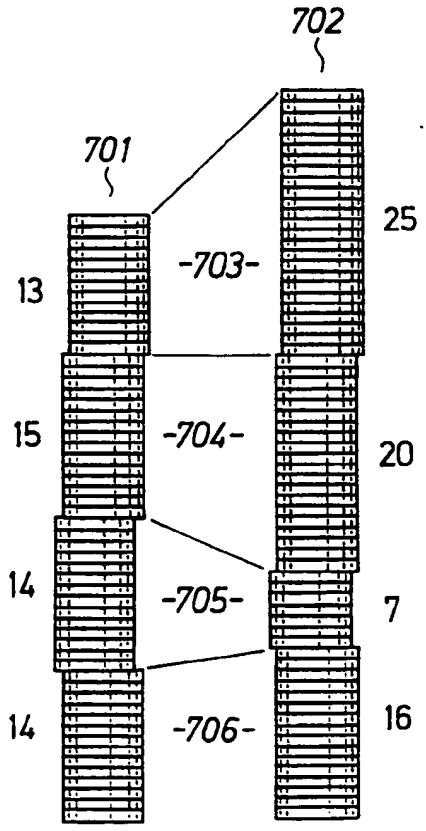

702
701
25
-703-
13
15
-704-
20
14
-705-
7
14
-706-
16

FIG. 7

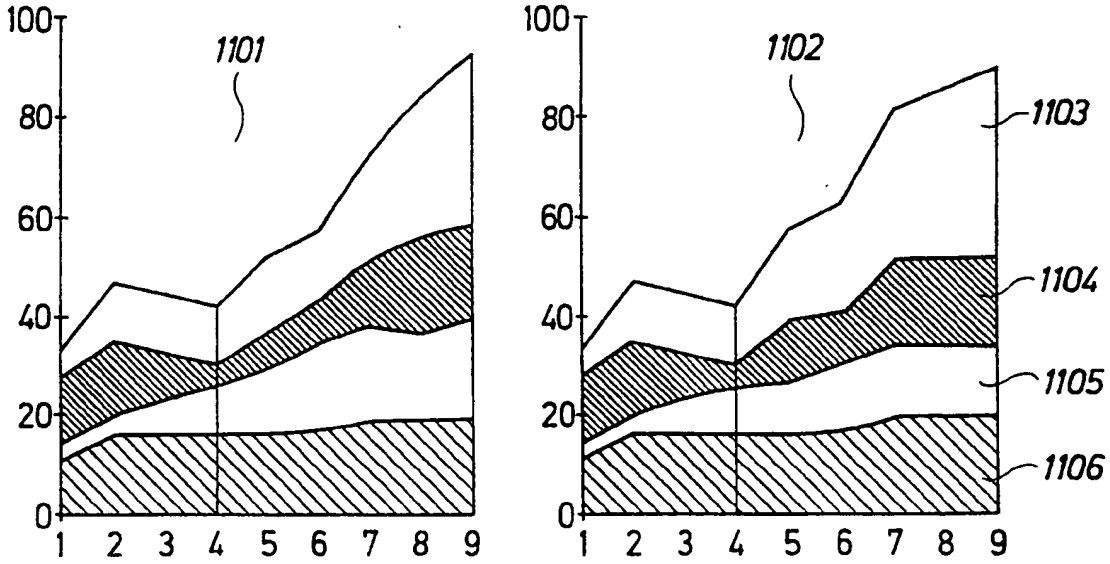

100
80
60
40
20
0
1 2 3 4 5 6 7 8 9
1101
1102
1103
1104
1105
1106

FIG. 8

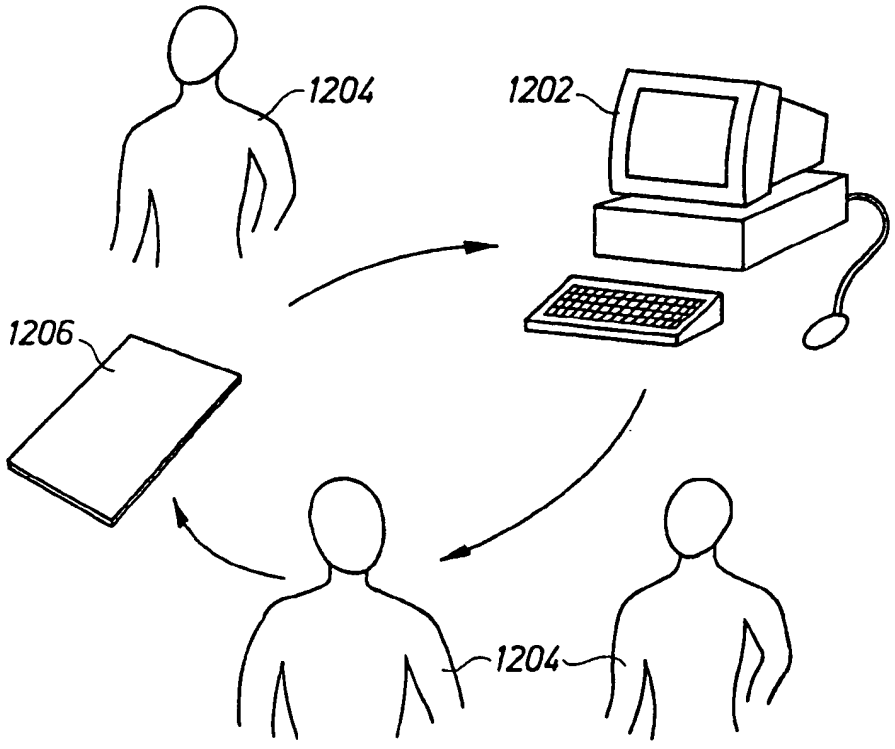

1204
1202
1206
1204

FIG. 9

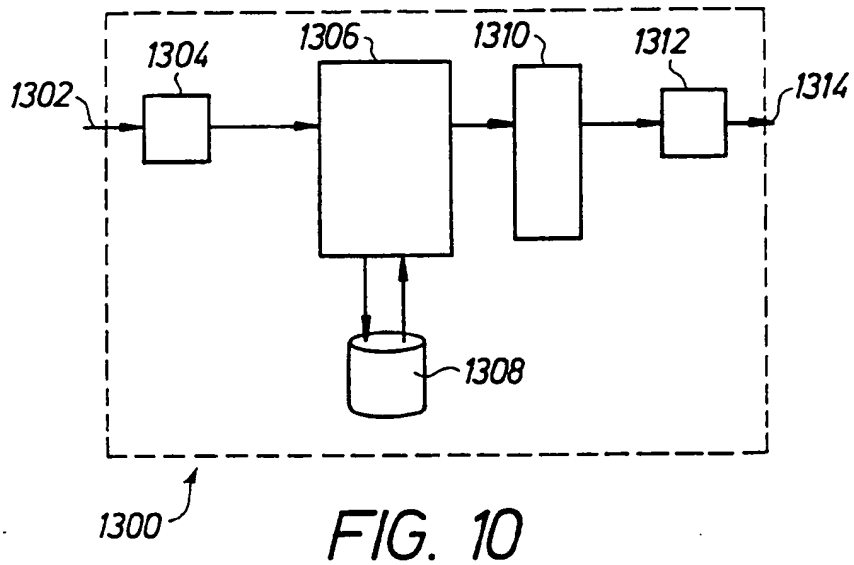

1304
1306
1310
1312
1302
1314
1308
1300

FIG. 10

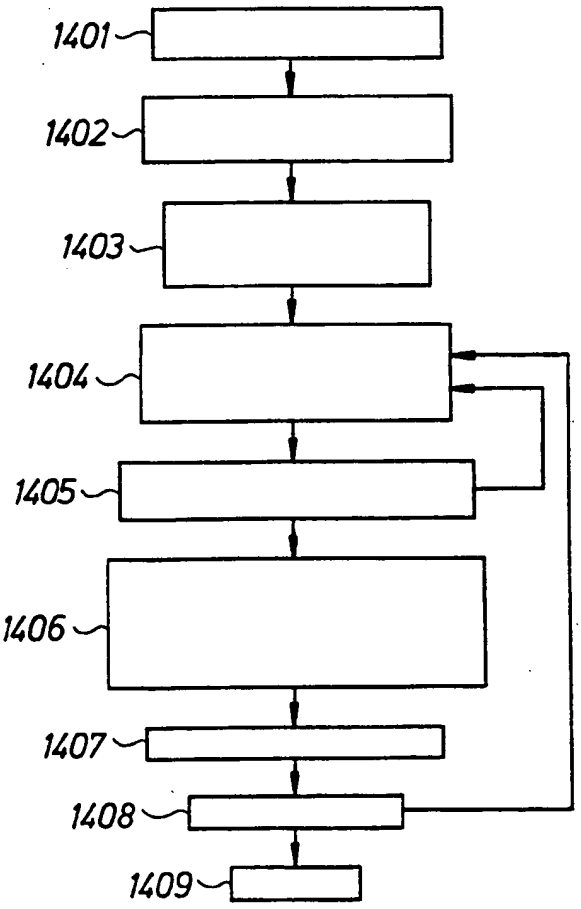

1401
1402
1403
1404
1405
1406
1407
1408
1409

FIG. 11